KICKER®

Impulse Subwoofers

8i, 10i, 12i & 15i
8m, 10m & 12m

Congratulations! You have just purchased an exceptional audio product from Stillwater Designs. IMPULSE Subwoofers are developed high quality bass reproduction in a wide variety of car audio applications. Each component is designed and engineered by the same team which developed the international award-winning KICKER speakers and enclosures. The IMPULSE 8i, 10i, 12i and 15i are designed for car audio applications; the IMPULSE 8m, 10m and 12m incorporate special water-resistant features for marine applications.

Features of the Impulse Woofers

- **Stitched surround** prevents cone/surround separation at high excursions.
- **Blackened pole piece** (8i, 10i, 12i & 15i) provides effective heat transfer and cool operation for maximum power handling.
- **Extended pole piece** reduces non-linear magnetic fields around the voice coil gap for improved heat sinking and increased cone movement control.
- **Vented pole piece** relieves pressure relief under the dust cap to enhance low bass.
- **Extended backplate** prevents damaging voice coil "bottoming".
- **High-temperature Kapton voice coil former** prevents cone meltdown and eliminates warped, rubbing voice coils.
- **High power tinsel lead wires** stop lead breakage and reduces power-robbing resistance losses.
- **Copolymer cone** delivers high internal damping for excellent midrange performance, excellent sunlight, pollution and moisture resistance, and high rigidity under pressure for linear bass performance.
- **Exclusive Inverted Structural Dome™** provides superior structural integrity.

Marine Subwoofer Water-Resistant features

- **White baked enamel finish** on basket and backplate
- **Butyl rubber cone surround**
- **Sleeved tinsel leads**

Enclosure Types

The KICKER Impulse subwoofers are specially designed to give excellent response in a variety of different enclosures. The simplest way to mount them in a sedan is in a freeair configuration. This also gives the smoothest response curve with excellent low bass extension. For other types of vehicles the sealed or vented enclosures work very well. A sealed box has the same characteristics as the freeair mounting while a vented enclosure gives a boost in efficiency through the region popular with Rap and Dance music.

Building Your Enclosure

Freeair Mounting

Although freeair woofer mounting doesn't require an actual enclosure, there are a couple of important things to consider. First, a sturdy mounting surface is necessary to avoid cancellations that can happen if the panel can vibrate. The normal method to assure a solid mounting surface is to reinforce the area used for woofer mounting with 3/4" MDF (Medium Density Fiberboard) or other sturdy wood. Secondly, the information that is radiated off the back side of the woofer must be isolated from the information coming off the front side of the woofer. This is important to keep the low bass from cancelling out. Look for and seal off any opening that could leak air from the back of the woofer to the front.

Sealed Enclosure

If an enclosed system is desired or necessary for your vehicle, the sealed box will yield the smoothest response for accurate bass reproduction. Construction of a sealed box is the simplest and will give consistent results. The box should be built using 1/2" MDF for the 8" woofer and 3/4" for all larger woofers. We recommend that cross braces be added to any panels over 15" across. When joining two panels, use a good grade of wood glue and screw or staple every 4 inches.

After the enclosure is assembled, go back inside and add RTV silicone to all joints to ensure an airtight box. If the box is built for multiple woofers, be sure to keep the airspaces separate. Before mounting the woofers, loosely fill the box about half full with fiberfill (the material used for pillow stuffing).

Vented Enclosure

A vented box is built just like a sealed box with the addition of a tuned port. If the port and box size are correctly designed (as they are in our recommendations), you get a boost in output at a desired frequency.

The recommended port material is Schedule 40 PVC. Both ends of the port need to be rounded to avoid chuffing noise, and the portion that goes through the wood should be roughed up for best adhesion. Use epoxy or RTV silicone to attach the port to the enclosure

When placing the port in the enclosure, make sure that the inside end is at least one port diameter away from any wall.

Positioning the Enclosure

In vehicles that are mostly open on the inside (like vans, utility vehicles, station wagons, and hatchbacks), the position of the enclosure will have a dramatic effect on the bass response. If the enclosure is mounted near the middle of the vehicle, the information that travels rearward has time to get out of phase before it recombines with the information that goes forward. This will effectively cancel the low bass. A better position is with the enclosure near the back of the vehicle with the woofer pointing rearward. In this configuration, the vehicle actually boosts the output in the low bass region and there are no cancellations.

Wiring

The KICKER Impulse subwoofers will operate best if they are used in conjunction with a subwoofer crossover of some kind. This will remove the unwanted upper bass frequencies and allow them to sound their best. The Impulse X2100i is a special two way passive network that is designed for use with Impulse satellite speakers and an Impulse 4 Ohm woofer load. The 4 Ohm load can be achieved with a single 4 Ohm woofer or two 8 Ohm woofers wired in parallel. The X2100i will remove low frequency information from your satellite speakers to increase their power handling and improve the sound quality.

Recommended Enclosures – Includes Driver and Port Displacements

Model	Sealed Box (cu. ft.)	F_3 (Hz)†	Vented Box (cu. ft.)	Vent Specs°	F_3 (Hz)†	F_b (Hz)Δ	P_{max}*
8i, 8m	.52 min.	58	.52 min.	2"D x 5"L	56	49	100
	.65 rec.	56	.65 rec.	2"D x 5"L	50	45	100
	.78 max.	53	.78 max.	2"D x 5"L	45	40	100
10i, 10m	1.0 min.	53	1.0 min.	3"D x 5.25"L	52	49	125
	1.25 rec.	51	1.25 rec.	3"D x 5.25"L	45	45	125
	1.5 max.	49	1.5 max.	3"D x 5.25"L	39	40	125
12i, 12m	1.4 min.	49	1.4 min.	3"D x 4.75"L	56	43	150
	1.75 rec.	46	1.75 rec.	3"D x 4.75"L	50	39	150
	2.1 max.	43	2.1 max.	3"D x 4.75"L	44	35	150
15i	2.4 min.	46	2.4 min.	4"D x 4.25"L	58	43	175
	3.0 rec.	43	3.0 rec.	4"D x 4.25"L	52	39	175
	3.6 max.	40	3.6 max.	4"D x 4.25"L	46	35	175

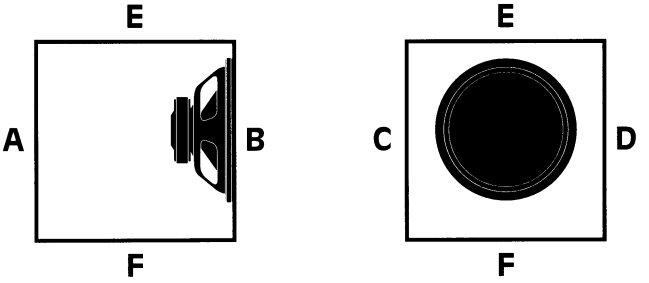
Δ Fb is the tuning frequency of the Vented Box. This determines the length of the tuned vent.

° Vent specs show the correct diameter (D) and length (L) for the vent.

† F_3 is the -3dB down point of the enclosure and driver. While this spec gives some indication as to the low frequency capability, it doesn't tell the whole story. A vented enclosure has increased output above the tuning frequency but drops off faster below that frequency. A sealed enclosure has a smoother response and drops off gradually at the lower frequencies. In addition, cone motion is more controlled in a sealed box, reducing the chance of mechanical damage to the woofer.

** Pmax is maximum amplifier power assuming a typical musical program at minimal amplifier clipping.*

Sample Enclosure Cut Sheet



Model	Box Size (cu. ft.)	Mounting Hole Diameter	Mounting Depth	A & B Panel	C & D Panel	E & F Panel
8i, 8m	.52	7 1/4"	3 7/8"	11" x 11"	11" x 10"	9 1/2" x 10"
	.65	7 1/4"	3 7/8"	11" x 11"	11" x 12 1/2"	9 1/2 x 12 1/2"
	.78	7 1/4"	3 7/8"	11" x 11"	11" x 15"	9 1/2" x 15"
10i, 10m	1.0	9 1/4"	4 1/2"	13" x 13"	13" x 13 1/8"	11 1/2" x 13 1/8"
	1.25	9 1/4"	4 1/2"	13" x 13"	13" x 16 3/8"	11 1/2" x 16 3/8"
	1.5	9 1/4"	4 1/2"	13" x 13"	13" x 19 5/8"	11 1/2" x 19 5/8"
12i, 12m	1.4	11 1/8"	5 7/8"	15" x 15"	15" x 13 3/8"	13 1/2" x 13 3/8"
	1.75	11 1/8"	5 7/8"	15" x 15"	15" x 16 5/8"	13 1/2" x 16 5/8"
	2.1	11 1/8"	5 7/8"	15" x 15"	15" x 20"	13 1/2" x 20"
15i	2.4	13 3/4"	6 7/16"	19" x 19"	19" x 13 5/8"	17 1/2" x 13 5/8"
	3.0	13 3/4"	6 7/16"	19" x 19"	19" x 17"	17 1/2" x 17"
	3.6	13 3/4"	6 7/16"	19" x 19"	19" x 20 3/8"	17 1/2" x 20 3/8"

All dimensions assume 3/4" wood thickness.

WARNING! IMPULSE drivers are capable of producing sound levels that can permanently damage your hearing! Turning up a system to a level that has audible distortion is more damaging to your ears than listening to an undistorted system at the same volume level. The threshold of pain is always an indicator that the sound level is too loud and may permanently damage your hearing. **Please use common sense when controlling volume!**

Speaker Systems Limited Warranty

Stillwater Designs warrants this product to be free from defects in material and workmanship under normal use for a period of one (1) year from date of original purchase. Should service be necessary under this warranty for any reason due to manufacturing defect or malfunction during the first year from date of original purchase, Stillwater Designs will replace or repair (at its discretion) the defective merchandise at no charge.

This warranty is valid only for the original purchaser and is not extended to owners of the product subsequent to the original purchaser. Any applicable implied warranties are limited in duration to a period of the express warranty as provided herein beginning with the date of the original purchase at retail, and no warranties, whether express or implied, shall apply to this product thereafter. Some states do not allow limitations on implied warranties, therefore these exclusions may not apply to you.

This warranty gives you specific legal rights; however you may have other rights that vary from state to state.

If you need warranty or service

Defective merchandise must be returned to your local Authorized Stillwater Designs (Kicker) dealer for warranty. Return only defective components. Non-defective items received will be returned freight collect. Freight damage on returns is not covered under warranty. Include proof-of-purchase. Warranty expiration on items returned without proof-of-purchase will be determined from the manufacturing date code. Coverage may be invalidated as this date is previous to purchase date. You can confirm that a dealer is authorized for service by the display of a current authorized dealer window decal. Any questions can be directed to the Warranty Department at (405)624-8510.

What is not covered

This warranty is valid only if the product is used for the purpose for which it was designed. It does not cover:

- Damage through negligence, misuse, abuse or accident.
- Damage caused by exposure to water and/or excessive heat.
- Items ripped, torn, or physically damaged due to abuse.
- The cost of shipping this product to Stillwater Designs Service.
- Items previously repaired by any unauthorized repair facility.
- Items returned from unauthorized individuals or dealers.
- Return shipping if defective drivers are returned with cabinet.
- Speakers with silicon caulk used for gasket material.

International Warranty

Contact your international Stillwater Designs Impulse dealer or distributor concerning specific procedures for your country's warranty policies, or contact us direct.

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